DETAILED ACTION

Claims 9-14 have been cancelled, claims 1, 2, and 16 are amended, , and claims 1-8, 15, and 16 are pending for examination. Claims 1, 2, and 16 are independent claims.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Robert T. Pous on 4/11/2011. The application has been amended as follows:

Claim 1 (Currently amended) A method for producing reduced iron, comprising:

a feedstock-feeding step of feeding a feedstock containing a carbonaceous reductant and an iron oxide-containing material into a rotary hearth furnace having flow rate-controlling partitions arranged therein for controlling the flow of furnace gas,

a heating/reducing step of heating the feedstock to reduce iron oxide contained in the feedstock into iron,

a melting step of melting the reduced iron,

a cooling step of cooling the molten reduced iron, and

a discharging step of discharging the cooled reduced iron,

these steps being performed in that order in the direction that a hearth is moved,

wherein the furnace gas in the melting step ~~is allowed to flow~~ flows in the direction of the movement of the hearth from the melting step to the cooling step using the flow rate-controlling partitions, and

wherein the furnace gas in the cooling step ~~is allowed to flow~~ flows in the direction of the movement of the hearth using the flow rate-controlling partitions, and oxidizing gas is prevented from flowing from the discharging step to the cooling step using the flow rate-controlling partitions.

Claim 2 (Currently amended) A method for producing reduced iron, comprising:

a feedstock-feeding step of feeding a feedstock containing a carbonaceous reductant and an iron oxide-containing material into a rotary hearth furnace having flow rate-controlling partitions arranged therein for controlling the flow of furnace gas,

a heating/reducing step of heating the feedstock to reduce iron oxide contained in the feedstock into iron,

a melting step of melting the reduced iron,

a cooling step of cooling the molten reduced iron, and

a discharging step of discharging the cooled reduced iron,

these steps being performed in that order in the direction that a hearth is moved,

wherein the furnace gas in the melting step ~~is allowed to flow~~ flows in the direction of the movement of the hearth from the melting step to the cooling step using

the flow rate-controlling partitions, whereby the pressure of the furnace gas in the melting step is maintained higher than that of the furnace gas in other steps.

Claim 6 (Currently amended) The method according to claim 5, including a step of controlling the flow of the furnace gas ~~to allow the furnace gas to flow~~ in the direction of the movement of the hearth by varying a size of the aperture of the one or more perforations.

Claim 7 (Currently amended) The method according to claim 1, including a step of controlling the flow of the furnace gas ~~to allow the furnace gas to flow~~ in the direction of the movement of the hearth by moving at least one of the partitions vertically.

Claim 8 (Currently amended) The method according to claim 7, wherein at least one of the flow rate-controlling partitions has one or more perforations and the step of controlling the flow of the furnace gas ~~to allow the furnace gas to flow~~ in the direction of the movement of the hearth also includes varying the aperture of the one or more perforations.

Claim 16 (Currently amended) A method for producing reduced iron, comprising:

a feedstock-feeding step of feeding a feedstock containing a carbonaceous reductant and an iron oxide-containing material into a rotary hearth furnace having flow

rate-controlling partitions arranged therein for ~~permitting a controlled~~ controlling flow of furnace gas therepast,

a heating/reducing step of heating the feedstock to reduce iron oxide contained in the feedstock into iron,

a melting step of melting the reduced iron,

a cooling step of cooling the molten reduced iron, and

a discharging step of discharging the cooled reduced iron,

these steps being performed in that order in the direction that a hearth is moved,

wherein the furnace gas in the melting step ~~is allowed to flow~~ flows in the direction of the movement of the hearth from the melting step to the cooling step using the flow rate-controlling partitions,

wherein the pressure of the furnace gas in the cooling step is maintained higher than that of the gas in the feeding step, and

wherein, due to the higher pressure of the furnace gas in the cooling step, the furnace gas in the cooling step ~~is allowed by the flow rate-controlling partitions to flow~~ flows in the direction of the movement of the hearth by using the flow rate-controlling partitions, but oxidizing gas is prevented by the flow rate-controlling partitions from flowing from the discharging step to the cooling step.

Status of the Previous Rejections

The previous rejection of claims 1-5, 7, 8, 15, and 16 under 35 U.S.C. 103(a) as being unpatentable over Kamikawa et al (US 6,413,471 B1, thereafter US'471) is withdrawn in view the applicants' arguments/remarks filed on 3/31/2011.

Allowable Subject Matter

Claims 1-8, 15, and 16 are allowed. The following is a statement of reasons for the indication of allowable subject matter:

Regarding the independent claims 1, 2, and 16, US'471 teaches a process for producing reduced iron in a rotary hearth furnace. US'471 teaches mixing an iron ore powder, a coal powder, a fluxstone (limestone) powder, and a binder to form reduced iron compacts, which reads on the feedstock containing a carbonaceous reductant and an iron oxide-containing material as recited in the instant claims. US'471 teaches feeding process, high temperature atmosphere (in which heating/reducing, melting steps are performed), and discharge portion (in which cooling, and discharging steps are performed). However, US'471 does not specify that in the step of melting, the furnace gas is flowed in the direction of the movement of the hearth, which can prevent oxidation gas flowing from the discharging step to the cooling step by the flow rate controlling partitions as recited in the instant claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delay, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on statement of Reason for Allowance".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/ Roy King/

Supervisory Patent Examiner, Art Unit 1733